

**Publisher:** ACM Press

Full text available:  pdf(616.35 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Wide area ocean networks for monitoring and scientific exploratory purposes are in various stages of design; small-scale networks are already in various stages of deployment and testing. Clearly, cost-effective coverage is a primary underlying principle; arguably, such networks must therefore employ low-cost, energy-efficient mobile nodes. The first objective of this work is to broadly describe the architecture and system design considerations of such wide-area networks with mobile nodes; second ...

**Keywords:** autonomous vehicles, energy efficiency, underwater networking

## 19 [FPGA-based systems: An SoC design methodology using FPGAs and embedded microprocessors](#)



Nobuyuki Ohba, Kohji Takano

June 2004 **Proceedings of the 41st annual conference on Design automation**

**Publisher:** ACM Press

Full text available:  pdf(75.56 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In System on Chip (SoC) design, growing design complexity has forced designers to start designs at higher abstraction levels. This paper proposes an SoC design methodology that makes full use of FPGA capabilities. Design modules in different abstraction levels are all combined and run together in an FPGA prototyping system that fully emulates the target SoC. The higher abstraction level design modules run on microprocessors embedded in the FPGAs, while lower-level synthesizable RTL design module ...

**Keywords:** ASIC, FPGA prototyping, SoC, mixed-level verification

## 20 [The embedded software consortium of taiwan](#)



Tai-Yi Huang, Chung-Ta King, Youn-Long Steve Lin, Yin-Tsung Hwang

August 2005 **ACM Transactions on Embedded Computing Systems (TECS)**, Volume 4 Issue 3

**Publisher:** ACM Press

Full text available:  pdf(422.96 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The advancement of semiconductor manufacturing technology makes it practical to place a traditional board-level embedded system on a single chip. The evolvement of system-on-chip (SoC) techniques presents new challenges for integrated circuit designs as well as embedded software and systems. To address these challenges, the Ministry of Education (MOE) of Taiwan has been running the VLSI Circuits and Systems Education Program since 1996. This program adopts a top-down approach by forming six doma ...

**Keywords:** Embedded software, educational curricula, integrated circuit design

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### 1 [MAC layer and interference: Collaborative ARQ in wireless energy-constrained networks](#)



Julián Morillo-Pozo, Jorge García-Vidal, Ana I. Pérez-Neira

 September 2005 **Proceedings of the 2005 joint workshop on Foundations of mobile computing DIALM-POMC '05**

Publisher: ACM Press

 Full text available: [pdf\(268.63 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper we propose a collaborative ARQ protocol that exploits diversity and collaboration between nodes in wireless networks. We show that when  $M$  neighboring nodes collaborate using the proposed scheme, they can achieve the BER versus SNR performance of an array of  $M'$  antennas provided that  $M = p/2 \times M' \sim 1.57 M'$ , in AWGN channels or  $M = 2M' - 1$  in Rayleigh channels. These results imply that collaborative ARQ can lead to huge savings in terms of power consumption. For instance, using BPSK in a Ray ...

**Keywords:** ARQ, AWGN, diversity, power saving, rayleigh fading, wireless network

### 2 [A process for consolidating and reusing design knowledge](#)

Guillermo Arango, Eric Schoen, Robert Pettengill

 May 1993 **Proceedings of the 15th international conference on Software Engineering**

Publisher: IEEE Computer Society Press

 Full text available: [pdf\(1.12 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#)

### 3 [Micro control hardware and high level languages interpreter: An attempt of macro supported by firmware](#)



J. Demarteau

 September 1974 **Conference record of the 7th annual workshop on Microprogramming**

Publisher: ACM Press

 Full text available: [pdf\(512.38 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The aim of this paper is to try and describe a new technique for implementing microprograms to form a dynamic interpreter of macro-languages. It demonstrates the connexion between the control address mechanism in micro-instruction and the structure of a dynamic interpreter. The proposed mechanism, which is like the Eastwood

fetch/generator instruction (1), is founded on a microprocedure call generator. The control store and control mechanism of the CPU are split into two specific levels : t ...


**Keywords:** Address control, Architecture, Instruction-generator, Macro-generation, Microprogramming

#### 4 SIGMA-CAD: Some new concepts in design of general purpose CAD systems

B. David, G. Vitry

June 1978 **Proceedings of the 15th conference on Design automation**

**Publisher:** IEEE Press

Full text available:  pdf(487.77 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

SIGMA-CAD is a general purpose CAD system based essentially on two new ideas: - construction of the PROTOTYPE of an application, which facilitates the implementation of an application by using techniques of computer assisted construction, allowing an incompletely defined system to function in simulation and thus permitting close collaboration between the builder and the future user. - adaptation of this PROTOTYPE to the fin ...

#### 5 Multihop wireless measurements: Cooperative packet scheduling via pipelining in 802.11 wireless networks

Ramana Rao Kompella, Sriram Ramabhadran, Ishwar Ramani, Alex C. Snoeren

August 2005 **Proceeding of the 2005 ACM SIGCOMM workshop on Experimental approaches to wireless network design and analysis E-WIND '05**

**Publisher:** ACM Press

Full text available:  pdf(218.04 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The proliferation of 802.11a/b/g based wireless devices has fueled their adoption in many domains -- some of which are unforeseen. Yet, these devices lack native support for some of the advanced features (such as service differentiation, etc.) required in specific application domains. A subset of these features relies on cooperative scheduling whereby nodes cooperate among each other to effectively manage resources such as power, throughput and interference in wireless networks. The trajectory of ...

**Keywords:** 802.11 wireless networks, cooperative scheduling, power conservation, proportional allocation, quality of service, streaming video

#### 6 Firmware structure and architectural support for monitors, vertical migration and user microprogramming

Mamoru Maekawa, Ken Sakamura, Chiaki Ishikawa

March 1982 **ACM SIGARCH Computer Architecture News , ACM SIGPLAN Notices , Proceedings of the first international symposium on Architectural support for programming languages and operating systems ASPLOS-I, Volume 10 , 17 Issue 2 , 4**

**Publisher:** ACM Press

Full text available:  pdf(754.07 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper describes firmware and hardware support necessary for constructing easy-to-understand and high performance operating systems including language translators and interpreters. Basic principles are one-to-one correspondence between logical hierarchy and physical hierarchy, and vertical migration. Implementation of monitors in firmware and architectural support for it are discussed, and a sample system is shown. Architectural support for user microprogramming is then discussed and an ...

## 7 SARA in the design room



Gerald Estrin

March 1985 **Proceedings of the 1985 ACM thirteenth annual conference on Computer Science**

Publisher: ACM Press

Full text available: pdf(998.55 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper presents an overview of SARA (System ARchitects Apprentice), an interactive environment which was created so that designers might enhance their capabilities to effectively design concurrent computer systems. SARA's requirements, methodology, support tools, and experiences are summarized in turn. The paper ends with a discussion of collaborative capabilities needed in the "design room".

## 8 Hands-On Interfaces: Illuminating clay: a 3-D tangible interface for landscape analysis



Ben Piper, Carlo Ratti, Hiroshi Ishii

April 2002 **Proceedings of the SIGCHI conference on Human factors in computing systems: Changing our world, changing ourselves**

Publisher: ACM Press

Full text available: pdf(1.50 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper describes a novel system for the real-time computational analysis of landscape models. Users of the system - called Illuminating Clay - alter the topography of a clay landscape model while the changing geometry is captured in real-time by a ceiling-mounted laser scanner. A depth image of the model serves as an input to a library of landscape analysis functions. The results of this analysis are projected back into the workspace and registered with the surfaces of the model. We describe ...

**Keywords:** 3D laser scanner, DEM, GIS, landscape design, physical models, tangible user interface

## 9 Creating user manuals for using in collaborative design



Harold Thimbleby

April 1996 **Conference companion on Human factors in computing systems: common ground**

Publisher: ACM Press

Full text available: pdf(240.18 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

## 10 Empirical evaluation of multi-level buffer cache collaboration for storage systems



Zhifeng Chen, Yan Zhang, Yuanyuan Zhou, Heidi Scott, Berni Schiefer

June 2005 **ACM SIGMETRICS Performance Evaluation Review , Proceedings of the 2005 ACM SIGMETRICS international conference on Measurement and modeling of computer systems SIGMETRICS '05, Volume 33 Issue 1**

Publisher: ACM Press

Full text available: pdf(379.25 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


To bridge the increasing processor-disk performance gap, buffer caches are used in both storage clients (e.g. database systems) and storage servers to reduce the number of slow disk accesses. These buffer caches need to be managed effectively to deliver the performance commensurate to the aggregate buffer cache size. To address this problem, two paradigms have been proposed recently to *collaboratively* manage these buffer caches together: the **hierarchy-aware caching** maintains ...

**Keywords:** collaborative caching, database, file system, storage system

# 11 Supporting collaborative field operations with personal information processing systems


Stephanie Guerlain, Jim Lee, Troy Kopischke, Tom Romanko, Peter Reutiman, Scott Nelson  
March 1999 **Mobile Networks and Applications**, Volume 4 Issue 1

**Publisher:** Kluwer Academic Publishers



Full text available:  pdf(1.15 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

This paper describes a two-year research project to develop a personal information processing system (PIPS) solution for the roving industrial field operator. Our PIPS system comprises (1) an RF network to deliver wireless digital information, (2) a wearable computer for delivering web-based information (the hardware is a two-piece system composed of a belt-worn NetPC attached via a curly cable to a handheld unit with a mouse/display device combination), and (3) software applications that p ...

# 12 Experiences with VI communication for database storage

 Yuanyuan Zhou, Angelos Bilas, Suresh Jagannathan, Cezary Dubnicki, James F. Philbin, Kai Li  
May 2002 **ACM SIGARCH Computer Architecture News , Proceedings of the 29th annual international symposium on Computer architecture ISCA '02 , Proceedings of the 29th annual international symposium on Computer architecture ISCA '02**, Volume 30 Issue 2


**Publisher:** IEEE Computer Society, ACM Press

Full text available:  pdf(1.29 MB)  Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)  
[Publisher Site](#)

This paper examines how VI-based interconnects can be used to improve I/O path performance between a database server and the storage subsystem. We design and implement a software layer, DSA, that is layered between the application and VI. DSA takes advantage of specific VI features and deals with many of its shortcomings. We provide and evaluate one kernel-level and two user-level implementations of DSA. These implementations trade transparency and generality for performance at different degrees ...

**Keywords:** Storage system, cluster-based storage, Database storage, storage area network, User-level Communication, Virtual Interface Architecture, processor overhead

# 13 A multi-user framework supporting video-based avatars

 Peter Quax, Tom Jehaes, Pieter Jorissen, Wim Lamotte  
May 2003 **Proceedings of the 2nd workshop on Network and system support for games NetGames '03**

**Publisher:** ACM Press

Full text available:  pdf(924.00 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

In this paper we present our ongoing work in setting up a multi-user framework that supports video texturing on avatars, creating added value for both gaming and collaborative work applications. Limiting the data propagation and bandwidth usage is a key goal when targeting a scalable application that will be deployed on a general-purpose network such as the Internet. We therefore present a number of techniques that can be used in these circumstances, including increased client responsibilities a ...

# 14 Organizational/business issues: Using a change-management approach to promote customer-centered design

-  Stephen Sato, Andrew Panton  
June 2003 **Proceedings of the 2003 conference on Designing for user experiences**

**Publisher:** ACM Press

Full text available:  [pdf\(382.79 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

Future business success is strongly linked to establishing and sustaining a superior customer experience. Through an internal company wide initiative called iTotal Customer Experience, Hewlett-Packard (HP) has focused on the delivery of a superior customer experience as a differentiating advantage. Using a proven change-management framework, the authors promoted a customer-centered approach to product development in designing tape drive products. This paper discusses the approach t ...

**Keywords:** business case, change-management, customer experience, experience design, organizational change, organizational culture, process improvement, product design, tape drive, user experience, user-centered design

15 Launching the new era


-  Kazuhiro Fuchi, Robert Kowalski, Koichi Furukawa, Kazunori Ueda, Ken Kahn, Takashi Chikayama, Evan Tick

March 1993 **Communications of the ACM**, Volume 36 Issue 3

**Publisher:** ACM Press

Full text available:  [pdf\(3.45 MB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#), [review](#)

16 An ASIP design methodology for embedded systems


-  Kayhan Küçükçakar

March 1999 **Proceedings of the seventh international workshop on Hardware/software codesign**


**Publisher:** ACM Press

Full text available:  [pdf\(385.14 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

17 A component model for standardized web-based education

-  August 2001 **Journal on Educational Resources in Computing (JERIC)**


**Publisher:** ACM Press

Full text available:  [pdf\(384.31 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#), [review](#)

We present a layered component model to support Web-based collaborative applications. We show how this model lets programmers focus on the particular logic of their applications, avoiding most of the issues related to collaboration, access control, and network management. The proposed model is organized into three layers on top of a foundation composed of commercial-off-the-shelf services and standard Internet protocols. The service level provides a network-transparent communications layer, data ...

**Keywords:** authoring tools, collaborative systems, educational web applications, learning technology standardization, web-based course delivery systems

18 Systems: Wide area ocean networks: architecture and system design considerations

-  Sumit Roy, Payman Arabshahi, Dan Rouseff, Warren Fox

September 2006 **Proceedings of the 1st ACM international workshop on Underwater networks WUWNet '06**